

ABSTRACT OF THE DISCLOSURE

The present invention utilizes one or more processes to immobilize a waste that contains one or more of radionuclides, hazardous elements, hazardous compounds, and/or other compounds present in the waste. Each of the processes create a barrier against leaching and diffusion of the wastes. The first barrier is created by integrating the waste with an immobilizing mineral. The second barrier is a layer of non-radioactive or non-hazardous material that covers the first barrier. The second barrier may be created using an overgrowth procedure or by sintering. The third barrier is created by a rock or glass matrix that surrounds the first and/or second barriers. The fourth barrier is created by ensuring that the rock or glass has the same or similar composition as the indigenous rock at the disposal site. The resultant rock or glass matrix is in equilibrium with the groundwater or local hydrothermal solutions that are saturated with components of the indigenous rock of the disposal area.